intermediate between the highest anthropoid and the highest form of man.

Dr. Smith Woodward fixes its date in the very early Pleistocene period, contemporary with the well-known Heidelberg jaw. Prof. Rutot, of Brussels, assigns the Piltdown stratum of gravel in which the remains were found to the latter part of the Pliocene period. If these views be accepted, it is of much earlier date than the remains of Neanderthal man recently discovered in France; and while Prof. Rutot estimates the duration of the Pleistocene period at 150,000 years, Prof. Penck, one of our greatest authorities on the Glacial period, estimates its duration from half a million to a million and a half of years.

On the other hand, Prof. Keith, of the Royal College of Surgeons, has articulated the portion of the skull to represent a large and well-modelled human head with a brain capacity of 1500 c.c—an amount slightly above the average of modern human brains.

The difficulty of accepting Dr. Smith Woodward's reconstruction is in believing that Eoanthropus could be transformed into modern man in the short period represented by the first half of the Pleistocene period. On the other hand, to quote the admirable summary of the question in *The Times* of August 11, "if Prof. Keith is right, then it is quite possible that mankind may have reached the stage represented by the Galley Hill remains before the middle of the Pleistocene period. If Dr. Smith Woodward is right, we have to seek the beginnings of our modern culture and civilisation at the middle of the Pleistocene period; if his opponent's reconstruction is well founded, we have to go a whole geological period further back—perhaps a million of years—to find the dawn of modern man and his culture."

In the discussion which took place, reported in *The Times* of August 12, the weight of scientific opinion seems to have been decidedly in favour of the views of Prof. Keith. But the importance of the question is so vital to the science of anthropology that we may be well advised to await further developments of the controversy.

HELMINTHS AND CANCER.

IN a memoir recently published,[1] Dr. Johannes Fibiger brings forward strong evidence in support of the view, by no means novel, that the lesions of the tissues produced by parasitic worms may act as the starting-point for the development of cancerous growths and tumours. The author found in wild rats a disease of the œsophagus and stomach characterised by an epithelial proliferation and inflammation leading, in pronounced cases, to a papillomatous growth which was the precursor of a malignant epithelioma. Examination of the primary lesions revealed the presence of a nematode worm, an undescribed species of Spiroptera.

From a series of experiments it was concluded that cockroaches (*Periplaneta americana* and *P. orientalis*) serve as intermediate hosts for the Spiroptera. The cockroach becomes infected by ingesting eggs of the worm which are passed out in the excrement of the rat; the eggs develop in the cockroach and the embryos of the worm become localised in the striated muscles of the prothorax and the legs. The rats become infected by eating cockroaches, and the embryos of the worm, set free from their cysts, attack the epithelium of the stomach, sometimes also that of the œsophagus or buccal cavity, and develop into the adult nematode, the cause of the lesions already mentioned. From his investigations the author concludes that all the anatomical alterations are due to toxic products of the nematode.

From the primary lesions caused by the nematode secondary metastases may be produced in other organs. The metastases contain neither the parasites nor their eggs. The development of the metastases is ascribed to the faculty of the epithelial cells to multiply in other organs independently of the parasite. The author thus confirms the view put forward by Borrel and others that nematodes may produce malignant tumours in rats and mice, and considers it not improbable that in human pathology also cancerous tumours may owe their origin in some cases to the presence of helminths.

NOTES.

A CIRCULAR from the Institut International de Physique Solvay informs us that a sum of 20,000 francs is available for the encouragement of experimental work in physics and physical chemistry, particularly for investigations on radiation phenomena (Röntgen rays and those of radio-active bodies) and for studies of the theory of energy quanta and of molecular theories. Grants from the fund will be awarded, without distinction of nationality, by the administrative commission of the institute on the recommendation of the international scientific committee. The administrative commission is composed of Profs. P. Heger, E. Tassel, and J. E. Verschaffelt, Brussels, and the scientific committee of M. H. A. Lorentz, president, Haarlem; Mme. M. Curie, Paris; M. Brillouin, Paris; R. B. Goldschmidt, Brussels; H. Kamerlingh-Onnes, Leyden; W. Nernst, Berlin; E. Rutherford, Manchester; E. Warburg, Berlin; and M. Knudsen, secretary, Copenhagen. Applications for grants should be made before September 15 to Prof. H. A. Lorentz, Zijlweg 76, Haarlem, Holland. They should state precisely what problems are to be investigated, the proposed means of inquiry, and the amount required, in order that the committee may have before it all details necessary in considering the awards to be made.

AN exhibit illustrating the damage caused to biscuits sent out in soldered tins for the use of the troops in South Africa—especially during the Boer war—Gibraltar, Malta, Ceylon, &c., has just been placed in the central hall of the British Museum (Natural History), where it will be kept open about a month. The larvæ of certain minute moths and beetles were the active agents; and it appears that since these cannot, in all probability, withstand the high temperature to which the biscuits are subjected in baking, the eggs must be laid by the moths during the period when the biscuits are being cooled before tinning. Two species of moths, *Ephestia kuehniella* and *Corcyra cephalonica,* both imported into this country, are the chief causes of the damage; and as a consequence of the ravages of the larvæ, the contents of many of the tins are reduced to uneatable rubbish.

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[1] Oversigt Kgl. Danske Videnskabernes Selskabs Forhandlinger, 1913, No. 1.

THE death is announced, as the result of an accident, of Prof. C. Bourlet, professor of mechanics at the Conservatoire des Arts et Métiers in Paris.

THE Permanent International Eugenics Committee has accepted the invitation of Dr. C. B. Davenport, of Cold Spring Harbour, Long Island, to hold the International Eugenics Congress in the United States next year, probably in the month of September.

MR. C. CARUS-WILSON has recently presented to the Royal Albert Memorial, Exeter, the large specimen of a granite geode exhibited by him at more than one Royal Society soirée, and awarded the bronze medal of the Franco-British Exhibition. The specimen is a fine mass of granite in which the mineral constituents have crystallised out around the walls of a large cavity.

IT speaks well for a general appreciation of the scientific value attaching to Arctic and Antarctic research that the actual conquest of both poles has not been followed by any diminution of exploring activity. News is to hand of the success of Captain Koch's Danish expedition for the crossing of Greenland. Captain Koch, who accompanied Mylius Erichsen on the journey which ended with that brilliant explorer's death, started in June, 1912, with the object of visiting Queen Louise Land. The party failed to carry this out owing to an accident which kept Captain Koch a prisoner for three months, after which winter was passed on the inland ice of Greenland. The expedition, starting on April 20 of this year from near the east coast, reached Proeven, near Upernivik, in the middle of July, after a march of 750 miles towards the close of which the party was within a few hours of starvation. A more prolonged journey is planned by Captain Amundsen, the first explorer to reach the south pole, who is shortly to board the *Fram* at Colon, when that famous vessel will sustain the honour of the first passage through the Panama Canal. She will then convey Amundsen to the Arctic, where he hopes to carry out a drift (such as Nansen attempted) across the polar area, being prepared to spend six years over the task, a period which should afford him almost unprecedented opportunity for scientific investigations.

IN the issue of *Man* for August Mr. T. A. Joyce describes the representation of the clan ancestor in animal form on ancient pottery from the Peruvian coast. The result of the investigation is to emphasise the importance of the clan ancestor in Peruvian cults, to illustrate the custom of dancing in dresses simulating animals, these dresses being almost the only kind of personal property under the communistic system of the Incas, and to show the wide distribution of the centipede as a *huaca* or totem in the Nasca Valley.

PERHAPS the most important paper in the excellent issue of the Journal of the Royal Anthropological Institute for January–June is the report by Mr. A. R. Brown, Wilkin student in ethnology, Cambridge, on three tribes in Western Australia—the Kariera, Ngaluma, and Mardudhunera. The paper describes in detail the complicated tribal organisation, totemism, rites of initiation, sociology, and religious beliefs of a people now rapidly disappearing. A good series of outline maps and a bibliography of the scanty published literature add to the value of this paper.

IN the issue of *L'Anthropologie* for January-February, 1913, Prof. H. Breuil and H. Obermaier publish a review of the work done in examining the cave paintings in Spain during 1912. A number of curious illustrations of men and animals is provided. The visit of M. Breuil and Prof. Sollas to Bacon Hole, near Swansea, is described. It is possible that the red bands observed on the cave walls may be the work of Palæolithic man, or they may belong to some later period; but there is no reason for trusting the local gossip which ascribes them to quite modern times.

IN 1906 Mr. R. F. Cummings supplied the Field Museum at Chicago with funds for an ethnological expedition to the Philippine Islands. The first part of the results of the investigations by Mr. F. C. Cole has now been issued in vol. i., No. 1, of the Museum's Anthropological Series. It is devoted to a study, historical and ethnographical, of the introduction of Chinese pottery into the islands. This pottery was chiefly intended for use by some of the Filipinos as burial jars. These in time acquired a high value, and were believed to possess supernatural properties. Among some tribes the bride-price is paid wholly or partly in jars. Porcelain plates are used by female mediums in summoning spirits, and such plates are so highly valued that they are never sold during the lifetime of the medium, and after her death only to her successors in office. The medium falls into an ecstatical state, chants songs invoking the spirits, and holding the plate on the finger-tips of her left hand, she strikes it with a string of seashells or a piece of lead, in order that the bell-like sound may attract the attention of the spirits. Suddenly a spirit possesses her, and she announces its wishes to the audience. This elaborate and well-illustrated monograph will interest anthropologists and collectors of Oriental porcelain.

A PROFUSELY illustrated article by Mr. George Shiras on automatic flashlight photography of wild animals by night forms the leading feature of the July number of *The National Geographic Magazine.* In fixing self-acting cameras in the haunts of nocturnal mammals, the author states that he has frequently used the same baits and scents as those employed by the trapper, and he adds that in many instances animals, after a brief experience, take little or no notice of the flashlight, which they perhaps regard as a form of lightning.

MR. M. C. TANQUARY has published, as article 9 of vol. ix. of the Bulletin of the Illinois State Laboratory of Natural history, an account of recent biological and embryological studies on Formicidæ, based on investigations into the habits and life-history of the American cornfield ant (*Lasius niger americanus*). Although this is believed to be the most abundant insect in the United States, such an investigation had never previously been undertaken, so that a number of new facts in its ecology have been brought to light.

Although the majority of the birds represented by fossil bones in the Pleistocene of the Oregon desert belong to species still existing, it is not a little remarkable that they include two extinct species of swan, one of which—*Olor matthewi*—is described for the first time in a paper on the fauna of the tract by Dr. R. W. Shufeldt, in the Bulletin of the American Museum of Natural History, vol. xxxii., art. vi. Noteworthy, too, as indicative of climatic changes, is the occurrence of remains of the snow-goose. In connection with the determination of fossil bird-bones, Dr. Shufeldt points out that in many cases allowance must be made for great differences in length due to differences in age and sex of the birds to which they belonged, and other conditions. Neglect of this may lead to very erroneous determinations.

At the conclusion of an article on the food of insects in *Naturwissenschaftliche Wochenschrift* of July 13 and 20, Dr. Hans Petersen points out that the chlorophyll found in the intestine of caterpillars becomes modified into a red substance—"vanessa red"—which is used in the epithelium, and, after pupation, as a pigment in the wings and other parts. Part of the red matter remaining unabsorbed in the intestine is finally voided. He also comments on the remarkable fact that the larvæ of clothes-moths subsist on absolutely dry keratin—the main constituent of wool—which all other animals seem completely unable to digest and assimilate. In regard to the consumption of wax by the larvæ of the wax-moth, it is considered that although this substance is essential to their existence, it is largely supplemented by remnants of pollen, honey, &c.

Apparently more or less harmless in its reputed native country, the Argentine ant (*Iridomyrmex humilis*) is a serious enemy to vegetation and crops in the numerous lands—including the warmer parts of the United States, Madeira, and Portugal—into which it has been introduced. So injurious indeed is this insect in Louisiana and some of the neighbouring States that its ravages, according to a special report by Messrs. W. Newell and T. C. Barber, published as Bulletin No. 122 of the U.S. Bureau of Entomology, are fully as bad as those of the caterpillars of the gipsy-moth, the boll-weevil, and the San José scale-insect. With the view of checking this mischievous ant, full details of its life-history have been worked out and recorded in the bulletin, together with suggestions as to remedial measures. In the orange orchards, where these ants have done incredible damage, the most successful plan has been to induce the colonies to congregate during winter in boxes filled with decaying vegetable matter, where they are subsequently destroyed by means of carbon bisulphide.

Dr. P. van Harreveld, who some years ago (*Rec. d. Trav. bot. Néerlandais*, vol. iii.) pointed out various imperfections in the forms of klinostat hitherto used in experiments on geotropism, heliotropism, and other phenomena of movement in plants, has now published in the same journal (vol. ix.) an account of a new form of this instrument devised by him. This "Universal Klinostat" is of somewhat complicated construction, which is illustrated by eighteen figures showing the various parts in detail, and the author claims that his form of this important instrument successfully eliminates all the sources of error arising from the use of the forms of klinostat that have been in use up to the present time; for details reference must be made to the author's paper.

We have received a copy of Prof. Guignard's memorial notice on the life and scientific work of the late Dr. Edouard Bornet, who died on December 18, 1911, at the age of seventy-three years. The list of Bornet's publications extends to nearly sixty titles, but he will be best remembered for his work on the algæ, and particularly for the two well-known volumes "Etudes phycologiques" and "Notes algologiques," which he produced in collaboration with Thuret between 1876 and 1880. The magnificent plates which illustrate these two works have never been surpassed for beauty and fidelity to nature in the entire range of botanical literature. In Prof. Guignard's admirably written and sympathetic sketch of Bornet's labours, we are taken back to what now appear extremely remote times and shown what an important part Bornet played as a pioneer in establishing the sexuality of the cryptogams and the dual nature of the lichens.

In a paper of considerable interest to geologists as well as to botanists, Dr. J. B. Scholz (*Engler's Bot. Jahrb.*, vol. xlvi.) discusses the "steppe problem" of the north German plain. There is at the present day a strong contrast between the mild equable climate of north-west Europe and the dry continental climate of the steppes of south Russia and west Siberia, but that the steppes had formerly a greater westward extension during at least one drier climatic phase in late Glacial times was shown by Nehring from the distribution of the loess with its characteristic steppe fauna, implying a corresponding steppe flora and climate. Scholz now brings forward various botanical evidences against the probability of a long steppe period in west Prussia, with interesting notes on the distribution of the characteristic steppe grass, *Stipa pennata*, and accompanying plants, pointing to the conclusion that these plants have entered north Germany along the valleys of the Vistula, Oder, and Elbe, all of which have the general direction south-east to north-west.

In a paper published by the Survey Department of the Egyptian Ministry of Finance, Dr. John Ball discusses the occurrence of the phosphate deposits found in the localities bordering on the Red Sea coast and in the Nile districts. In the Safâga district alone these phosphate beds are believed to exist over about fourteen square kilometres, and have been found to contain 20 to 70 per cent. of tricalcic phosphate. During the five years 1908–12 the output of phosphate has risen from 700 to 70,000 tons, and, now that the mines are connected by rail with the seaboard, Egypt bids fair to contribute a not insignificant portion of the world's production.

THE first part of vol. viii. of the quarterly *Agricultural Journal of India* contains a number of interesting and important papers, including the following. Mr. H. Maxwell-Lefroy reports at length upon the Psylla disease of indigo, which apparently causes part only of the unhealthy conditions observed in the plants. The author considers that the insect is the direct cause only of curling of the shoot tips and leaves, with a checking of growth, leading to decreased weight of cut plant and a small decrease in the seed yield; while the more extensive and serious disease symptoms exhibited by indigo plants are attributed to some at present unknown organism or physiological cause quite independent of Psylla. The issue includes papers on the improvement of Indian wheat, by Albert and Gabrielle Howard, and that of the indigenous cottons of the United Provinces, by H. Martin Leake and A. E. Parr; while G. S. Henderson contributes an interesting paper on dry farming, based on his visit to dry-farm stations in Texas and New Mexico, and C. M. Hutchinson describes experiments on the relation between drainage and the growth of rice.

IN a paper by Prof. A. J. Ewart and Mr. Norman Thomson, published in the Proceedings of the Royal Society of Victoria (vol. xxv., p. 193), the question of the possibility of cross-inoculation of the root-tubercle bacteria upon native and cultivated leguminosæ is discussed. It was found impossible to cause the growth of root nodules on a number of commoner leguminosæ by inoculation with infusions of the tubercles of certain native legumes, such as *Acacia mollissima,* and different species of Papilionaceæ. This is apparently due to the fact that the bacteria of such nodules are incapable of directly adapting themselves to a new host plant. On the other hand, when the bacteria from one plant are grown on nutrient gelatin media, they appear to develop more generalised infective power, and it was found possible readily to infect peas and broad beans, grown both in water cultures and in sterilised soils, with bacteria from acacia nodules, isolated and cultivated on nutrient gelatin. Root-tubercle bacteria taken directly from the living tubercle are, however, apt to die out in sterilised soil or in water cultures before they have become sufficiently generalised to be capable of infecting a foreign host plant.

THE earthquake of November 8, 1912, in the south-east of Luzon presented several features of interest (Bulletin of the U.S. Weather Bureau). It was preceded by a number of slight shocks, beginning on November 5. Though strong enough to cause considerable damage, the meizoseismal area was small, being only twenty-two miles long and six miles wide. As the Rev. M. Saderra Masó points out, this implies that the focus was close to the surface. The earthquake was nevertheless registered at Hamburg and San Fernando, more than 6000 miles from the Philippine Islands. No lives were lost, owing to the lowness of the houses, the lightness of their materials, and the ample time that elapsed before destructive intensity was attained.

PROF. OMORI has recently described the extraordinary volcanic eruption of the Usu-san in July and August, 1910 (Bull. Imp. Earthq. Investigation Com., vol. v., 1911, pp. 1–38). The eruption was accompanied and followed by the formation of a new mountain on the northern flank of the volcano. By November the height of this mountain had increased by 510 ft., though by April, 1911, this amount was lessened by 120 ft. In a later paper in the same volume of the bulletin (pp. 101–7), Prof. Omori shows that the elevation-phenomena were not confined to the northern side. At his request the heights of the first order bench marks were re-determined to the west and north-west of the volcano in the summer of 1911, and along the same lines and also on the south side of the mountain in the summer of 1912. The first measurements indicated an elevation of the ground surrounding the mountain to a distance of three to five kilometres to the west, the maximum rise being about 2½ metres. At a greater distance to the west there was a slight subsidence. The measurements made in 1912 showed a reversal of the movement, the area surrounding the mountain being slightly lowered, while that beyond to the west was slightly raised.

THE meteorological charts of the North Atlantic for August, issued by the Meteorological Office and the Deutsche Seewarte, contain interesting details relating to the ice in that ocean. On the east and north coast of Newfoundland, and on the northern half of Newfoundland Bank and eastwards, many icebergs are still met with. The latest reports received from the scout-ship *Scotia* relate to ice between 48° N. 50° W., and 47° N. 45° W., July 11 to 15. During June icebergs were met with, east of 45° W., as far south as the steamship routes. Small charts are published by the Meteorological Office giving the extreme limits of icebergs in the north-western Atlantic for each of the months March to June during twelve years ended 1912, and also during the year 1913. This year the bergs have been confined to higher latitudes, as a general rule, than in previous years. This is thought to be probably due to a northerly extension of the Gulf Stream, a northerly set having been reported by several steamers. The bergs seen have been comparatively few in number and of small dimensions.

THE *Mitteilungen aus den deutschen Schutzgebieten,* vol. xxvi., part 1, contain valuable tables of monthly and yearly means of meteorological observations for 1911, made under the auspices of the Imperial Colonial Office, and discussed at the Deutsche Seewarte under the able superintendence of Dr. P. Heidke. Among several useful articles we may mention an investigation of the nature of the obscurity of the air during the prevalence of the Harmattan wind at Togo, West Africa, with reports (1) by Captain v. Seefried, who conducted the experiments with glass filtering tubes packed with wadding, and (2) by the Geological Central Section for German Protectorates. The cloudiness has been supposed by some authorities to be due to ashes from grass fires, and by others to dust particles from desert regions. The geological report is to the effect that the principal cause is essentially due to the remains of diatoms, and that the presence of particles of ashes is only to be considered as a secondary and local phenomenon. It is pointed out that this result agrees with opinions as to the nature of the dust observed in the vicinity of Cape Verde Islands, and it is suggested that some botanist skilled in the examination of diatoms might determine from their forms the place of origin of the dust particles obtained in Togo.

The Survey Department of Egypt has recently published an important volume containing daily readings (August, 1872–December, 1911) of the Nile gauge at Roda (Cairo), together with summaries and diagrams. In a preface by Mr. J. I. Craig (director, Meteorological Service) it is pointed out that projects are in hand, or proposed, that will tax the supplies of the river to the utmost, and that it is more than ever desirable that existing records should be made accessible. With the exception of the nilometer at Aswan, the gauge at Roda is the oldest in the country; its readings have been recorded (with several gaps) for about thirteen centuries, but it is only from 1872 that complete daily readings exist, and up to the end of 1899 these were recorded according to the Coptic calendar and in old measures, so that the figures were of little value to European investigators. The formidable work of conversion to Gregorian dates and to modern measures, together with computations for the whole period in question, has been carried out with scrupulous care by Mohammad Effendi Kâsim (inspector, Meteorological Service), who has also contributed the introductory text. This period of daily records includes five cases of high floods (exceeding 20 metres) and five cases of low floods (not exceeding 18 metres), also years of abnormally early and late floods, such as that of 1880 (forty-nine days early) and that of 1894 (twenty-four days late).

In a paper presented to the Astronomical and Astrophysical Society of America in January, and reprinted in abstract in the July Journal of the Washington Academy of Sciences, Mr. W. J. Humphrys, of the United States Weather Bureau, examines the question whether the presence of volcanic dust in the upper atmosphere is sufficient to account for the periods of abnormal cold which have at times been experienced simultaneously over the whole earth. He finds that the meteorological records from 1750 onwards show that cold periods were in every case preceded by volcanic eruptions, and that the greater the eruption the longer the period of unusual cold. In the case of the eruption at Krakatoa in 1883 the years 1884–5–6 were all 1° or 2° F. below the normal temperature. Measurements made at the U.S. Weather Bureau since 1883 show that dust in the upper atmosphere produced by an eruption may decrease by 20 per cent. the intensity of solar radiation received at the earth's surface.

OUR ASTRONOMICAL COLUMN.

A Star with Large Proper Motion.—In *Astronomische Nachrichten,* No. 4674, Miss E. F. Bellamy directs attention to the large proper motion of Helsingfors 914, which was found when assisting the Vatican Observatory in the reductions of its portion of the Astrographic Catalogue (zones +65° to +55°). The star is close to Hels. 913, and since the seconds of R.A. in the Helsingfors Catalogue for 914 and 913 are 44·8s. and 44·2s., whereas in BD they differ by 5s., and the Vatican residuals also differed by nearly 5s., it was at first thought that there was a mistake in Helsingfors. Subsequent investigation showed that Hels. 914 had a considerable proper motion, the motions being +0·236s. and +0·36″ annually. Miss Bellamy points out that the centennial proper motion in arc of a great circle is +157·0″, the largest proper motion hitherto found in either the Oxford or Rome work, the next largest being 141·9″.

"Giant" and "Dwarf" Stars.—In an address given at the meeting of the Royal Astronomical Society in June last, and reported in the current number of *The Observatory,* Prof. H. N. Russell presented a short account of the studies which have led him to adopt a theory of stellar evolution through stages of increasing and decreasing temperatures, as Ritter deduced from thermodynamical considerations and similar to the idea of a "temperature curve" which spectroscopic work led Sir Norman Lockyer to suggest represented the course of development of a stellar body from a sparse meteoritic swarm to a dense, feebly radiating, and dying sun. Briefly, by considering absolute magnitude (a function of mass, density, and surface brightness) and spectral type, Russell finds that there are no faint white stars; all the very faint stars are red, and among the reddest stars, K and M classes, there is a distinct separation into two groups, one much brighter, the other much fainter, than the sun. To explain the existence of the two kinds of stars, the "giant" and "dwarf" stars first noticed by Dr. Hertzsprung, recourse is made to the evidence afforded by double stars and eclipsing variables; from the former differences due to mass are eliminated, and from the latter the effects of variation of density are deduced. It appears that the series of dwarf stars is one of slowly increasing density from B to M, while among the giant stars density decreases very rapidly from B to M, and it is suggested that the giant stars of class M represent a very early stage of evolution, class B a stage near the middle, and the dwarf stars later stages according to increasing faintness and ruddiness. As a confirmation of the theory it is pointed out that the actual densities of the stars of class A and B are of the order of magnitude (one-tenth that of water) at which Lord Kelvin predicted temperature should be a maximum.

The Stationary Radiation of Meteors.—The present position of this puzzling question in the field of meteoritic astronomy is discussed by Mr. W. F. Denning in the August number of *The Observatory.* The observational difficulties and possible accuracy of determinations of radiants are indicated. The reality of the phenomenon is insisted upon, and some of the unsatisfying explanations which have been offered by Greg, Ranyard, Proctor, Herschel, and Turner, among others, are briefly mentioned.